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ABSTRACT

The Australian experience is that teacher professional associations form the third side of the triangle of support for teachers' work; the others being teachers' formal education (initial preparation to be a teacher and ongoing study) and input from their employer. This third side is inherently democratic and empowering for teachers--they are in control. It also gives teachers a 'voice' and contributes to their overall professional standing. This paper outlines the ways in which associations of teachers of mathematics operate in Australia as an example of the ways in which teacher subject associations can contribute to the knowledge and skills of their members. Discussion centers on the capacity for sharing insights and approaches with colleagues in the Asia-Pacific region, and learning from them, in the context of increasing globalization and improving access to information and communication technologies. (DDR)

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Teacher professional associations as key contributors to the effectiveness of teachers' work

Paper presented to the Fifth UNESCO-ACEID International Conference, Reforming Learning, Curriculum and Pedagogy: Innovative Visions for the New Century

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The Australian experience is that teacher professional associations form the third side of the triangle of support for teachers' work, the others being the teacher's formal education (initial preparation to be a teacher and ongoing study), and input from his/her employer. This third side is inherently democratic and empowering for teachers — they are in control. It also gives teachers a 'voice' and contributes to their overall professional standing.

This paper outlines the ways in which associations of teachers of mathematics operate in Australia as an example of the ways in which teacher subject associations can contribute to the knowledge and skills of their members. Discussion centres on the capacity for sharing insights and approaches with colleagues in the Asia-Pacific region, and learning from them, in the context of increasing globalisation and improving access to information and communication technologies.

Introduction — the triangle

From an engineering point of view the triangle has strength. Hence, a triangular model of support for teachers' professional work can be seen to be inherently strong. Although I can only reflect my own experiences, it is likely that there are some similarities between the potential of the model, and the strength of the 'third side' in Australia and the situations in other countries.

Side 1 — Formal education

Teachers in Australia undertake a period of formal education after finishing schooling which is designed to prepare them for their working lives as teachers. Typically there are studies of aspects of disciplines, as well as studies in the field of education (pedagogy, psychology etc). This formal pre-service education is

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compulsory. There is also a percentage of teachers who voluntarily undertake formal post-graduate courses in education to further their knowledge and skills.

Side 2 — Education authorities, systems and employers

Those responsible for education systems and employing teachers take on a role of supporting those teachers in their work. Most commonly this is done by providing curriculum guidance in the form of syllabuses, teaching materials and other support. These organisations often undertake to train their teachers (for example in support of a changed syllabus, or in the use of a new technology). Professional development opportunities can also be provided to enable teachers to maintain and extend their professional knowledge and help them improve their professional performance in general ways.

Side 3 — Professional associations

Professional associations of many different types, and with many different emphases, are voluntary groupings of teachers which supply a range of supports that could be argued are now integral to supporting teachers in their work. The kind of groups to which I refer — of which the Australian Association of Mathematics Teachers (AAMT) is but one of many hundreds — have teachers' professional lives as their focus. It may be an arbitrary distinction that is unsustainable in other places, but our professional associations mostly see themselves as having different concerns from those of the teacher unions, whose concerns are 'industrial' (pay rates, employment conditions etc).

Activities of professional associations

While the experiences of participants in this conference will be diverse in relation to all three sides of the triangle, the first two are, I believe, reasonably well established and understood in most places. It is the contribution of the third side — professional associations — which I believe is worth further exploration, particularly in the contexts of emphases on teachers' lifelong learning, globalisation and access to information and communication technologies. To do this I will begin by reflecting on the work of the AAMT for no reason other than it is the organisation about which I know most. The intention is that our work will provide something of an example in raising the general issues and possibilities.

About the AAMT

The Australian Association of Mathematics Teachers is the pre-eminent professional association in school mathematics education in Australia. It exists to support and enhance the work of teachers, promote the learning of mathematics and represent and promote interests in mathematics education.

The AAMT has around 6 000 individual and institutional (mostly school) members. The Association includes mathematics educators in all education sectors (government, Catholic, independent as well as universities), in all states and territories and levels of schooling, K-12. It is a national federation of self-governing state and territory associations.

Direct support for teachers and their work

The AAMT provides direct support for teachers of mathematics through a range of means:

- Refereed journals — these focus on classroom related issues, teaching approaches, reviews of resources and applying research and theory to the classroom.
- Professional development activities — conferences and workshops (nationally, but a particularly strong feature at the state/territory level), and increasingly nationally and internationally through the use of Information and Communication Technologies.
- Teaching resources — publications and other resources for sale at reduced cost to members; by publishing locally developed material and obtaining the best from Australia and overseas we provide access to teaching materials our members would find difficult (or even impossible) to get.
- Projects — depending on funding, research and development activities in areas of need (eg Indigenous students' numeracy, means for using communications technologies for professional development).

These sorts of activities, to a greater or lesser extent, would characterise the work done by Australia's professional associations at all levels in support of their members' (ie teachers') work

Indirect support

The actions taken to provide indirect support for teachers are necessarily less obvious. For the AAMT they include advocacy on behalf of mathematics in schools, and teachers of mathematics. As a nationally recognised group we represent our members' interests to government and commercial interests. Increasingly we have found a willingness from others to seek our opinion and advice. A good example has been providing the Commonwealth Government with policy and program advice in relation to numeracy education through projects funded by that government.

Again, these are what the AAMT has focussed on in providing indirect support — other associations at a range of levels will have had similar experiences.

Characteristics of professional associations in Australia

Having considered briefly what professional associations 'do', I turn now to discuss what they are 'like' by identifying some characteristics which, although related to the AAMT, are, I believe, broadly common among professional associations in my country.

Associations are:

- Voluntary — office-holders and decision-makers do so on a volunteer basis, outside of their normal paid work, although some of the larger associations do employ staff to provide mainly administrative support.
- Good 'value for money' — evaluators of a recent major government funded professional development project estimated that each dollar of actual expenditure on programs conducted by professional associations generated

four dollars of value, as a result of voluntary time and effort added; within the AAMT each dollar of members' funds makes possible turnover within mathematics education of between six and ten dollars.

- Unaligned with particular interests or sectors — the diversity of membership makes this inevitable and, as a result, professional associations are able to build partnerships with others (employers, governments, schools, universities, private enterprises) when the need and opportunity arises.
- Able to respond relatively quickly — associations generally have small 'bureaucracies' and do not therefore have the organisational impediments to fast responses in changed circumstances that usually characterise universities and education systems, the institutions responsible for the other sides of the triangle of support.
- Focussed on the 'professional' — dedication to supporting their members professional work and, ultimately, the quality of students' learning makes professional associations' work fit with high ideals the community holds for education.

These are the key factors which create a strong case for the credibility of organisations like the AAMT, its state and territory affiliates and all kindred organisations. Naturally maintaining these ideals is essential for remaining credible. So too is maintaining a good level of service to members.

Inevitably, there are some negative aspects which impact on associations' work. The commitment to service creates many more needs than the available resources seem able to deal with. Within school mathematics, for example, we could identify research projects and resource and professional development needs which would require many times the actual budget — of money and voluntary time — than we could possibly ever have. This creates a need for setting priorities which may neglect some members' real needs, but even with what the AAMT and local groups currently do there is a genuine sense of being overworked. Being stretched to (and sometimes beyond) capacity would be a characteristic of many, perhaps all, professional associations.

Within the Australian context, relief from this pressure could come through greater funding from governments. Substantial government funding of professional associations risks, however, compromising the essential independence of the associations. This is not to say that some government funding is unacceptable. The AAMT is happy to seek government support for initiatives when appropriate, but does so on a case-by-case basis, in a context of maintaining — and being seen to maintain — its independence and capacity to criticise other government policies and initiatives. Other associations take a similar stand.

Although groups like the AAMT perhaps feel over-committed, the identification and pursuit of new opportunities is always important.

Potential for professional associations

In thinking about 'innovative visions for the new century' for a conference of educators from the Asia-Pacific region, the twin contexts of globalisation and access to information and communication technologies create some areas of real potential for professional associations of teachers. The full scope of this potential is impossible to even begin to outline in a short paper. Two aspects of the AAMT's recent work will serve to illustrate the potential and create a springboard for developing other ideas.

Internet-based professional development

The AAMT has four activities which use the Internet as the means for professional development. These have been developed for our members, but access is available to all teachers around the region and globe who have access to the Internet.

- Virtual Conferences — the AAMT has run Virtual Conferences in 1998 (220 participants; focussed on use of technology in secondary schools) and 1999 (540 participants; five themes across K-12) and these are now established, annual events. We have adapted a computer program for on-line course delivery to provide integrated web-based information and communications (bulletin board, local email, chat facilities) that has proved very effective. Our Virtual Conferences operate like a 'normal' conference with papers and presentations, with the advantage of discussion being over an extended period. These are recorded and therefore able to be published as true 'proceedings'.
- Interact — a series of online debates of 'hot topics' in mathematics education. The process involves commissioning focus papers (2 pages) on either side of a contentious issue (eg the *Usefulness of pencil and paper tests* is the next topic), and some invited responses (one page). These are published on the AAMT website. Conversation then ensues through an email list-serv (all members receive all communications) for a period of approximately one month, with the focus paper writers formally concluding the debate with their final comments.
- The general AAMT Email list — a list-serv community of more than 400 members. This group has developed from a slow start into a mature professional forum used by its members on an 'as needed' basis for sharing information and discussing issues ranging from teaching tips and teaching resources through to lengthy, thoughtful discussions on important aspects of pedagogy and educational politics.
- The AAMT website (http://www.aamt.edu.au) — the resources and links available are a contribution to mathematics teachers' professional lives that are much valued by our members and others.

Professional associations in Australia and elsewhere have other activities and approaches, many of which are more imaginative than these, but the AAMT's sample gives an indication of the potential. Many of the concerns in school mathematics in Australia are also apparent in other places. Hence, at least some of the professional development in the above is likely to be interesting and

relevant to teachers of mathematics in the region — certainly there are already some non-Australian participants and users of all of these.

Professional Development Project in India

In 1998-9 the AAMT received commercial sponsorship to conduct a professional development project in collaboration with some schools in Delhi, India. The aim was to share Australian teachers' expertise in the use of graphics calculator technologies with Indian colleagues in order to assist efforts to implement their use for teaching and learning mathematics in secondary schools. The program involved visits by Australian teachers to India for workshops, conferences and in-school support and consultancy, and a Study Tour of Australia by some of the key teachers from the Indian schools.

Just completed (December 1999), the project has been quite successful in achieving many of its aims. Certainly AAMT members and Australian schools involved have indicated that they have gained a great deal from it, as has the organisation itself. As a professional association, the AAMT was ideally suited to the task. From its 6,000 members, the Association was able to put together teams of teachers with the knowledge and skills required for leading the professional development activities. With direct access to schools of all types the Study Tour program was able to be diverse and therefore extremely informative. Above all, the fact that the program linked teachers with teachers has resulted in a special 'bond' between committed professional colleagues which we (and those involved) are determined to build upon.

Again, it is likely that there are other international collaborative teacher-to-teacher programs that have been established by other professional associations — this is one illustrative example, albeit one which the AAMT is particularly pleased and proud to have been part of.

The third side of triangle in the region

In Australia, the third side of the triangle — professional associations — is relatively strong. The AAMT would naturally like to be stronger in its work on behalf of teachers of mathematics, and to have more members who could both benefit from and share in the work of the Association. It is, however, true that professional associations generally are recognised, valued and acknowledged as a legitimate and significant part of what happens in education. That this is not the case across the region is certainly clear — this was brought home in the Indian project where there was great interest in what the AAMT is and does, in the context, apparently, of there being no similar body in that country.

It may be, of course, that the triangular model of support for teachers is simply not appropriate in other countries and contexts. The development of a strong culture of professional associations may not be either applicable or feasible. In Australia, the presence of relatively well-educated and well-paid teachers has obviously had a great deal to with where associations are today, although it is

worth noting that the strength of the professional associations is a relatively recent phenomenon. For example, the AAMT has only been established for 30 years or so. It has grown rapidly from a very small base even only fifteen years ago.

Whatever the applicability of the model in other countries, the two examples of AAMT activities suggest some ways forward. Even if the development of really active, powerful mathematics teacher associations is impractical or undesirable, teachers from around the region can be involved in and benefit from existing professional development activities through use of Information and Communication Technologies. Collaborative international development programs which explicitly involve teachers and teacher organisations can add two key dimensions. Firstly, teachers working with and learning from other teachers is powerful and persuasive, and very sound professional development practice. Secondly, and this has been the AAMT's experience, it can activate thinking about whether and how to establish similar professional association structures, and provide models and contacts with people able to assist.